

CLAIMS

What is claimed is:

1. An axle assembly comprising, in combination:
an axle tube having a first end and a second end;
a mounting module formed as a unitary extension of the axle tube; and
at least one steel insert positioned near the first end of the axle tube, wherein
the at least one steel insert is adapted to be welded with a differential carrier to
secure the axle tube to the differential carrier.

2. The axle assembly of claim 1 wherein the differential carrier comprises one of
ductile iron and aluminum.

3. The axle assembly of claim 1 wherein the mounting module comprises at
least one of a yoke, a shock absorber attachment bracket, a stay bar attachment
bracket, an upper control arm attachment bracket, a lower control arm attachment
bracket, a spring seat, a jounce bumper bracket, a steering damper attachment
bracket, and a track bar attachment bracket.

4. The axle assembly of claim 3 wherein the mounting module is formed unitary
with the axle in a lost foam process.

5. The axle assembly of claim 1 wherein the first end of the axle tube is press fit into an opening in the differential carrier.

6. The axle assembly of claim 1 wherein the axle comprises ductile iron.

7. The axle assembly of claim 1 further comprising three steel inserts spaced around the first end which can be aligned with corresponding openings in the differential carrier and weld material is positioned in the corresponding openings to secure the axle assembly to the differential carrier.

8. An axle assembly comprising, in combination:
an axle tube adapted to provide structural support to a motor vehicle; and
a differential carrier adapted to provide a structural support for a gear transmission of the motor vehicle and formed as a unitary extension of the axle tube.

9. The axle assembly of claim 8 further comprising
a second axle tube having a first end and a second end, wherein the first end of the second axle tube is secured to the differential carrier.

10. The axle assembly of claim 9 wherein each axle tube has a corresponding mounting module formed unitary therewith, each mounting module comprising at least one of a yoke, a shock absorber attachment bracket, a stay bar attachment bracket, an upper control arm attachment bracket, a lower control arm attachment

1 bracket, a spring seat, a jounce bumper bracket, a steering damper attachment
2 bracket, and a track bar attachment bracket.

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4 12. The axle tube assembly of claim 9 wherein the unitary axle tube and
5 differential carrier are formed unitary in a lost foam process.

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7 13. The axle tube assembly of claim 9 wherein the axle tube and unitary
8 differential carrier are formed from ductile iron.

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